AG Contract No.: KR02-1957TRN
ADOT-ECS File No : JPA 02-156
TRACS No : P600010P
Project: Cactus Ferruginous Pygmy-Owl Study
Section: Sonora, Mexico

INTERAGENCY AGREEMENT

BETWEEN
THE ARIZONA DEPARTMENT OF TRANSPORTATION
AND
THE UNIVERSITY OF ARIZONA

THIS AGREEMENT is entered into 24th February, 2003, between agencies of the STATE OF ARIZONA, to wit; the ARIZONA DEPARTMENT OF TRANSPORTATION, acting by and through its Transportation Planning Division (the "State") and the UNIVERSITY OF ARIZONA, acting by and through its President and the College of Agriculture, School of Renewable Natural Resources, (the "U 0f A")

II. RECITALS

1. The State is empowered by Arizona Revised Statutes Section 28-401 to enter into this agreement and has by resolution, a copy of which is attached hereto and made a part hereof, resolved to enter into this agreement and has delegated to the undersigned the authority to execute this agreement on behalf of the State.

2. The U of A is empowered by the Arizona Revised Statutes Section 17-231 to enter into this agreement and has delegated to the undersigned authority to execute this agreement on behalf of the U of A.

3. The State and the U of A desire to conduct a study to assess the effects of state highway construction on: nest-site selection, construction noise, and large scale movements of the Cactus Ferruginous Pygmy-owl. Such work will be conducted on a number of roadways in northern Sonora, Mexico, generally in accordance with Exhibit A, attached hereto and made part hereof, currently estimated at $279,271.00, hereinafter referred to as the Project. The parties hereto agree that the U of A shall be the lead agency for the Project.

4. As the Project progresses, the State and the U of A will review, and where necessary, make adjustments to meet the various requirements for successful implementation of the Project.

THEREFORE, in consideration of the mutual agreements expressed herein, it is agreed as follows:

SCOPE OF WORK

1. The State will:

a. Appoint a Project Coordinator within the State to interface with the U of A relating to the Project.

b. Provide the U of A with information and data as may be reasonably available to assist in the Project work.

c. Contribute $279,271.00 to the Project on a reimbursable basis. Reimburse the U of A, within forty-five (45) days after receipt and approval of monthly invoices, in an amount up to $279,271.00, if no other monies become available.

2. The U of A will:

a. Appoint a Project Coordinator at U of A to interface with the State relating to the Project.

b. Contribute in-kind services to the Project in the amount of $69,818.00. In strict compliance with all state procurement laws, rules and regulations, procure and obtain necessary Project materials and supplies; select a graduate assistant to assist in the evaluation.

c. Provide the State such progress reports and deliverables as they are developed.

d. On an as needed basis, no more often than monthly, invoice the State in the form of Exhibit B attached hereto and made a part hereof, supported by narrative reports and an accounting of expenditures, including the match, associated with the Project, to the Project Manager for the State, as noted in III. 7. below.

III. MISCELLANEOUS PROVISIONS

1. Title to all documents, reports and other deliverables prepared by the U of A in performance of this agreement shall rest jointly with the State and the U of A.

2. This agreement shall become effective upon signatures by the parties hereto, and shall remain in force and effect until 31 December 2005, or upon completion of said project and reimbursements; provided, however, that this agreement, may be cancelled upon mutual agreement, if the proposed objectives outlined in this agreement are not being met, with thirty (30) days written notice to the other party.

3. The parties agree to comply with all applicable state and federal laws, rules, regulations and executive orders governing equal employment opportunity, immigration, nondiscrimination and affirmative action.

4. This agreement may be cancelled in accordance with Arizona Revised Statutes Section 38-511.

5. The provisions of Arizona Revised Statutes Section 35-214 are applicable to this contract.

6. In the event of any controversy that may arise out of this agreement, the parties hereto agree to abide by required arbitration as is set forth for public works contracts in Arizona Revised Statutes Section 12-1518.

7. All notices or demands upon any party to this agreement relating to the agreement shall be in writing and shall be delivered in person or sent by mail addressed as follows:

For Contract:

Arizona Department of Transportation
Joint Project Administration
205 S. 17th Avenue – Mail Drop 616E
Phoenix, Arizona 85007
FAX: 602-712-7424

University of Arizona
School of Renewable Natural Resource
Biological Sciences East Room 325
Tucson, AZ 85721

For Billing Notices:

Arizona Department of Transportation
Environmental Planning Group
Attn: Robert Forrest, Project Manager
205 S. 17th Avenue – Mail Drop 616E
Phoenix, Arizona 85007
Phone:602-712-6843
FAX: 602-712-7424

University of Arizona
Janet Hornung
888 N. Euclid #510
P.O. Box 3308
Tucson, AZ 85722-3308
Phone: 520-626-6000
FAX: 520-626-4130

8. The parties recognize that performance by U of A and State, under this agreement, may be dependent upon the appropriation of funds by the federal government. Should they at any time fail to appropriate the necessary funds for such performance, then, by written notice to the other party, either party may cancel this agreement.

IN WITNESS WHEREOF, the parties have executed this agreement the day and year first above written.

STATE OF ARIZONA

UNIVERSITY OF ARIZONA

By _____ 1/24/03
RICHARD C. POWELL
Vice President for Research
Lee Anne T. Peters
Contract Officer

DEPARTMENT OF TRANSPORTATION

By _____
DALE BUSKIRK, Acting Division Director
Transportation Planning Division

G:02-156-ENVIR-UofA-Pygmy Owl Study
16Nov2002

JPA 02-156

RESOLUTION

BE IT RESOLVED on this 30 day of October, 2002, that I, the undersigned VICTOR M. MENDEZ, as Director of the ARIZONA DEPARTMENT OF TRANSPORTATION, have determined that it is in the best interests of the STATE OF ARIZONA that the DEPARTMENT OF TRANSPORTATION, acting by and through its TRANSPORTATION PLANNING DIVISION, to enter into an agreement with the UNIVERSITY OF ARIZONA, acting by and through its PRESIDENT and the COLLEGE OF AGRICULTURE, SCHOOL OF RENEWABLE NATURAL RESOURCES, for the purpose of defining responsibilities to conduct a study to asses the effects of state highway construction on: nest-site selection, construction noise, and large scale movements of the Cactus Ferruginous Pygmy-Owl, for the benefit of future mitigation measures.

Therefore, authorization is hereby granted to draft said agreement which, upon completion, shall be submitted to the Acting Transportation Planning Division Director, for approval and execution.

Maria J Avelar

MARIA J. AVELAR, Administrative Manager
Transportation Planning Division
for VICTOR M. MENDEZ, Director

JPA 02-156

APPROVAL OF UNIVERSITY of ARIZONA ATTORNEY

I have reviewed the above referenced proposed interagency agreement, between the DEPARTMENT OF TRANSPORTATION, TRANSPORTATION PLANNING DIVISION and the UNIVERSITY OF ARIZONA, and declare this agreement to be in proper form and within the powers and authority granted to the University under the laws of the State of Arizona.

DATED this 21ST day of January, 2003, ~~1996~~.

Attorney for University of Arizona

Association Between Roadways and Cactus Ferruginous Pygmy-owls in Northern Sonora, Mexico

Project Coordinator: Robert Forrest, Arizona Department of Transportation, Environmental Planning Group, Phone: 602-712-6843. Email: RForrest@dot.state.az.us.
Investigators: Aaron Flesch and Robert J. Steidl, School of Renewable Natural Resources, University of Arizona, Biological Sciences East Room 325, Tucson, Arizona, 85721. Phone: 520-626-3164. Email: flesch@ag.arizona.edu, steidl@ag.arizona.edu.

INTRODUCTION

Roadways can potentially influence wildlife in a variety of ways. Roadways, like all other environmental alterations, will be beneficial to some species and detrimental to others. For wildlife with high mobility and high area requirements, vehicle traffic may affect the way in which animals traverse the landscape maybe be a source of direct mortality. Further, behavior and movements of wildlife may be influenced by noise disturbances from roadways.

Cactus ferruginous pygmy-owls (*Glaucidium brasilianum cactorum*) were listed as an endangered species by the U.S. Fish and Wildlife Service in 1997. Since that time little new information has been collected on their habitat selection and movements in Arizona, in part, because of the scarcity of pygmy-owls. Detailed information on habitat selection, movements, and other behaviors near roadways may inform management strategies to mitigate potential impacts of roadways on owls. A well-distributed population of pygmy-owls in neighboring northern Sonora, Mexico, can provide the foundation by which to inform management of the Arizona population.

We will examine relationships between pygmy-owls and roadways in northern Sonora by studying the influence of roadways on patterns of nest-site selection and movements, and by quantifying noise levels near existing nests.

OBJECTIVES

This research project has four primary objectives:

1. Assess effects of roadways on nest-site selection of pygmy-owls.
2. Assess the effects of roads and other large openings on movements of adult pygmy-owls with their home ranges.
3. Assess the effects of roads on juvenile pygmy-owls during dispersal.

4. Document intensity and variation in noise levels at pygmy-owl nests adjacent to roads.

METHODS

Objective 1: Roadways and nest-site selection

We will select areas across northern Sonora at random, all within 2 km of roadways within which to survey for pygmy owls. We will then post-stratify survey sites by roadway type (primary, secondary, dirt), then assess patterns of nest-site selection across this gradient from narrow, light-duty roads to major paved highways. Restricting selection of study sites within 2 km of roads will allow us to isolate effects of road size despite potential differences in habitat composition.

Within each stratum, we will survey for pygmy-owls then locate nests of all individuals recorded. We will compare features around nest sites with those of nearby areas that are potential sites to assess characteristics selected by pygmy-owls. We will measure plots of 15 m (0.07 ha), 30 m (0.28 ha), and 90 m (2.54 ha) radius centered on nests and random substrates, and measure distances to habitat features of interest including a range of habitat characteristics including the density, volume, height, and species composition of surrounding vegetation. We will record the distance from nests and random substrates to roadways and other artificial openings, the width and type of roadways present, and estimate the area covered by roadways within plots.

These steps will allow us to quantify the influence of different roadways on patterns of nest-site selection by pygmy owls. We will complete field work for this objective in 2002 and winter 2003.

Objective 2 and 3: Roadways and Owl Movements

We will assess the influence of roadways and other landscape elements on behavior and movements of adults and dispersing young from 2003 to 2005. We will radio mark 10-20 adults owls per year on their territories near roadways. We will then monitor movements during intensive observation periods in mornings, mid-day, and evenings throughout the breeding season (March through July). We will mark all perches used by owls and record distance flown between successive perches. We will mark locations where owls cross roadways and measure characteristics of the roadway, the crossing point, and the distances between successive perches. Additionally, we will record time and activity budgets for all behaviors during monitoring periods, including perching, hunting, striking at prey, preening, carrying prey, etc. We will not approach birds within ~75 meters so as not to influence behavior of owls under observation.

After the breeding season, we will plot all perch locations and determine home range boundaries and dimensions. We will then quantify the coverage, density, and type of

roadways present and vegetation characteristics within home ranges and the relative frequency of use of perches near roadways.

We will also radio mark 10-15 juveniles (1 or 2 per territory) and track all radio-marked birds intensively for 12-16 weeks during the dispersal period (or until transmitter batteries fail). Juveniles will be radio marked soon after fledging and movements monitored as owls disperse from natal territories.

We will focus our analyses to assess whether roads influence movements, behavior near roadways, times of day and other conditions when owls attempt to cross roadways, including the length of time birds remain near roadway edges before crossing. Furthermore, we will measure features of both roadways (length of road, shoulder, etc.) and vegetation (height, species, etc.) at all crossing points. Fieldwork for this objective will be completed during the 2003, 2004, and 2005 breeding seasons.

Objective 4: Noise levels at pygmy-owl nests

We will locate nest sites as part of objectives 1 and 2, from which we will select a sample of nest sites in close proximity to major highways. We will coordinate the placement of Arizona Department of Transportation (ADOT) equipment near nests and monitor equipment during the sampling period. With the assistance of ADOT staff, we will record intensity of traffic noise at nest sites throughout portions of the day and night and document variation in noise levels across the sampling period. These efforts will provide information on the intensity and variation of noise levels found at occupied pygmy-owl nests sites.

DELIVERABLES

We will provide interim reports of accomplishments each of the first three years, by 31 December 2002, 2003, and 2004 and brief updates after the completion of each field season. Additionally, we will provide a final report detailing all relevant findings and management recommendations in the winter of 2005-'06. We will be available to meet and discuss the results of this study with members of the U.S. Fish and Wildlife Service as part of any current or future consultation as desired by ADOT personnel.

SCHEDULE

Project Element	Dates
Nest site selection and roadways	
Field work	2002 & Winter 2003
Movement of adult and juveniles	
Field work	Spring to Fall 2003 - 2005
Noise levels	
Field work	Summers - determined by ADOT availability
Final Report	Winter 2005-'06

Budget

	2002	2003	2004	2005
I. Salaries and Wages				
Field Technicians ($1,500/person/month)	6,000	18,750	18,750	18,750
ERE @ 10.7%	642	2,006	2,006	2,006
Research Associate	15,000	15,000		
ERE @ 20.6%	3,090	3,090		
Graduate Research Assistant		8,000	16,000	16,000
ERE @ 3.2%		256	512	512
II. Supplies and Miscellaneous Costs				
Reports, Publications, Maps, Data sheets	500	750	750	2,500
Radio Transmitters (25/year @$250 each)		6,250	6,250	2,500
Noise Generator		1,500		
Permits and Associated Fees	3,000	3,000	3,000	1,500
Miscellaneous Field Supplies	1,500	2,500	2,500	2,500
III. Travel				
University Motorpool Vehicles	7,475	10,000	10,000	10,000
Per Diem	2,000	2,000	2,000	2,000
Airplane time		3,000	3,000	3,000
Travel for student to present results				1,500
IV. Total Direct Costs	39,207	76,102	64,768	62,768
V. Total Indirect Costs @ 15%	5,881	11,415	9,715	9,415
VI. Total Annual Project Costs	45,088	87,517	74,483	72,183
Total Cost: $279,271				

Budget (In-Kind and Future Matching Support)

	2002	2003	2004	2005
I. Salaries and Wages				
Associate Professor (20% of appointment)	12,700	12,700	12,700	12,700
ERE @ 19.4%	2,464	2,464	2,464	2,464
Graduate Research Assistant	8,000			
ERE @ 4.1%	521			
Field Technicians	6,000			6,000
ERE @ 10.4%	624			624
II. Supplies and Miscellaneous Costs				
Reports, Publications, Maps, Data sheets	500	250	250	1,500
Radio Receivers and Antennas	5,000			
Computers and Peripherals	5,000			
Miscellaneous Field Supplies	1,000			
III. Travel				
University Motorpool Vehicles	2,626	1,520	2,140	2,500
Per Diem	2,000			
Airplane time		3,000	3,000	3,000
IV. In-Kind Contributions	46,435	19,934	20,554	28,788
V. Waived Indirect Costs @ 10%	4,644	1,993	2,055	2,879
VI. Total In-Kind Contributions	51,079	21,927	22,609	31,667

Total Cost: $127,282

Itemizations for Vehicles

Rental costs (4 x 4 carry-all) for pygmy-owl research in Sonora, adjusted annually.

	2002	2003	2004	2005	Total
Rental Rate ($ per day)	85	90	95	100	
No. days	100	150	150	130	
Rental cost ($/day x no. days)	8,500	13,500	14,250	13,000	49,250
Mileage Rate ($ per mile)	0.20	0.21	0.22	0.25	
Estimated mileage	8,000	12,000	12,000	10,000	
Mileage cost ($/mile x no. miles)	1,600	2,520	2,640	2,500	9,260
Total cost	10,100	16,020	16,890	15,500	58,510
Amount requested from ADOT	7,474	10,000	10,000	10,000	37,474
In-Kind Contribution by UA	2,626	6,020	6,890	5,500	21,036

Estimated Effort for Field Technicians

Number of field assistants needed for each objective. Each assistant costs $1,500 per month (plus employee related expenses).

Years	Objective	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2002	Nest searching			1	1						
2002	Habitat measures								2	2 *	2 *
2003-2005	Adult movements	1	2	2	2	0.75					
2003-2005	Juvenile movements				1	1	1	1	1		
All	Data									2 *	2 *

years	management										
Support Requested		3	6	7	10	5.25	3	3	5		
Provided In-Kind (*)										4	4

OFFICE OF THE ATTORNEY GENERAL
STATE OF ARIZONA

CIVIL DIVISION
TRANSPORTATION SECTION
WRITER'S DIRECT LINE: 602.542.8855

TERRY GODDARD
ATTORNEY GENERAL

INTERGOVERNMENTAL AGREEMENT DETERMINATION

A.G. Contract No. KR02-1957TRN (JPA 02-156), an Agreement between public agencies, has been reviewed pursuant to A.R.S. § 11-952, as amended, by the Undersigned Assistant Attorney General who has determined that it is in the proper form and is within the powers and authority granted to the State of Arizona.

No opinion is expressed as to the authority of the remaining Parties, other than the State or its agencies, to enter into said Agreement.

DATED February 12, 2003.

TERRY GODDARD
Attorney General

Susan Davis

SUSAN E. DAVIS
Assistant Attorney General
Transportation Section

ARIZONA DEPARTMENT OF TRANSPORTATION
PROGRESS PAYMENT REPORT

Report No.	EXHIBIT B	JPA 02-156
		PROGRESS
Item No.		FINAL
Project No.		
TRACS No.		Date Ending:
Name of Project	Cactus Ferruginous Pygmy-owl Study	
Name of Vendor	University of Arizona, School of Renewable Natural Resources	
REMIT PAYMENT TO:	*Attn: Janet Hornung, 888 N. Euclid, # 510, P.O. Box 3308, Tucson, AZ 85722-3308*	
Date Started	% Billed	% Complete

SUMMARY OF WORK FOR WHICH PAYMENT IS REQUESTED

Items	DESCRIPTION	CONTRACT NOT TO EXCEED	Previous Accumulative Amount	Current Month	Accumulative Amount
	Per JPA 02-156	$ 279,271.00			$ 279,271.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
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					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00

Submitted By: _____ Date:	Total: To: Date:	$0.00
Approved By: _____ Date:	Total: Previous: Report:	$0.00
ADOT Project Manager		
Concurred By: _____ Date:	Current: Report:	$0.00
Joint Project Administration		

CONT-MASTR-PR-FORMAT 6/2/02